UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/493,013	01/28/2000	Toshimitsu Kaneko	0039-7544-2TTCRD	1659

22850	7590	10/10/2003

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER
AKHAVANNIK, HUSSEIN

ART UNIT	PAPER NUMBER
2621	

DATE MAILED: 10/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

    4a) Of the above claim(s) *1-8 and 15-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-14 and 21-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

        1.☒ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____ .

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

Election/Restrictions

1.   This application contains claims 1-8 and 15-20 drawn to an invention nonelected with

traverse in Paper No. 6. A complete reply to the final rejection must include cancellation of

nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Response to Amendment

2.   The amendments to the specification overcome the Examiner's objection cited in

paragraph 3 of the previous office action.

Drawings

3.   The drawings were received on July 18, 2003. These drawings are accepted.

Response to Arguments

4.   Applicant's arguments with respect to claims 9-14 have been considered but are moot in

view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

6.   Claims 9-14, 21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Palmer (U.S. Patent No. 5,684,715) in view of Itokawa (U.S. Patent No. 6,404,901), and further

in view of Ito et al (U.S. Patent No. 6,445,409).

        Referring to claim 9,

i.   Extracting feature data of a predetermined object and feature data of a background

area from a frame of an input video is not explicitly explained by Palmer. Palmer does

explain extracting feature data of a predetermined object in column 6, lines 8-29. The

attribute generator is responsible for determining characteristics of an object such as

position, shape, size, and layering information for each video object. However, Palmer

does not extract feature data of the background area from a frame. Itokawa illustrates

extracting both the foreground area and the background area from an image input in

figure 8, reference numbers 102 and 104. Itokawa further explains that the background

can be extracted whether it moves or does not move in column 9, lines 21-30. The

extraction of feature data from the background is explained by Itokawa in column 9, lines

42-50. In order to save spatial and temporal information about an entire frame, it would

be necessary to extract both the object and the background information from a frame.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to extract feature data of a predetermined object and feature data of

the background area from a frame.

ii.   Describing the feature data of the predetermined object and the feature data of the

background area as a descriptor of the frame, the feature data of the predetermined object

including color information of an area of the predetermined object is not explicitly

explained by Palmer or Itokawa. Palmer does illustrate describing the feature data of a

predetermined object as a video descriptor in figure 3. Furthermore, Itokawa explains

determining the feature data of a background area of a frame corresponding to part i of

this claim. However, the system of Palmer and Itokawa does not include color

information as feature data of a predetermined object. Ito et al explain including color

distribution in order to track and monitor an object in column 10, line 57 to column 11,

line 3. By determining the color distribution of an object and storing it in the object

descriptor of Palmer and Itokawa, an object is better defined and able to be tracked more

accurately throughout a series of frames. Therefore, it would have been obvious to one

of ordinary skill in the art at the time the invention was made to describe the feature data

of the predetermined object, including color information of an area of the predetermined

object, and the feature data of the background area as a descriptor of the frame so that

complete feature data about an entire frame of video is recorded and object tracking is

performed more accurately.

iii.   Attaching the descriptor to the frame is illustrated by Palmer in figure 3, as the

video object descriptor 60 corresponds to object 64 of frame 51.

Referring to claim 10, describing a difference between the feature data of the

predetermined object and the feature data of the background area as the descriptor is not

explicitly explained by Palmer. However, Itokawa explains in column 9, lines 6-30 that the

background data and the foreground data are separated, thereby describing the difference

between the feature data and the background data. Itokawa further illustrates in figure 26,

illustrates the difference between the background motion vectors (601) and the object motion

vectors. In order to separate a predetermined object from the background area of a frame, it

would be necessary to determine a difference between a feature of the object and the

background. Therefore, it would have been obvious to one of ordinary skill in the art at the time

the invention was made to describe a difference between the feature data of a predetermined

object and the feature data of the background area.

Referring to claim 11,

i.   The feature data of the predetermined object including at least position, outward

form or size, and moving information of the object is explained by Palmer in column 4,

lines 51-59 and column 5, lines 7-11. The descriptor is explained to include spatial

information including the position and size of each object and the temporal information

includes action information that specifies movement of the object.

ii.   The feature data of the background area including at least the moving information

of the background area is not explicitly explained by Palmer. However, Itokawa explain

that a background area may be moving and that the background movement maybe be

calculated as the motion value vector, Vb in column 9, lines 21-30 and illustrated in

figure 11. In order to save information of an entire frame when the background is

moving, as suggested by Itokawa, it would be necessary to extract both the moving

information of the object and the moving information of the background. Therefore, it

would have been obvious to one of ordinary skill in the art at the time the invention was

made to include the moving information of the background in the feature data of the

background.

Referring to claim 12, the descriptor including:

i.   A frame number is illustrated by Palmer in figure 4, as each frame has its own

corresponding frame ID.

ii.   A pointer to a next descriptor is explained by Palmer in column 5, lines 7-11. The

action information in the descriptors will allow the computer to jump from one frame

sequence to another frame sequence, which also would contain a descriptor.

iii.   The feature data of the background area corresponds to claim 11.

iv.   The feature data of each object in the frame is explained by Palmer in column 5,

lines 12-26. Palmer explains that there will be a separate video descriptor for each of the

objects in the frames.

Referring to claim 13, the descriptor being created from a corresponding frame at an

interval of a predetermined number of frames in the input video is explained by Palmer in

column 6, lines 23-29 and illustrated in figure 4. The interval of frames in the input video is one.

Referring to claim 14, this claim includes all the limitations of claim 14, but is performed

on a computer readable medium. Palmer illustrates a computer readable medium capable of

performing the method of claim 9 in figure 2 as Disk (15).

Referring to claims 21 and 23, the feature data of the predetermined object including at

least one of a moving vector and an affine transformation coefficient is illustrated by Palmer in

figure 3 by the action and the action parameters of the video object descriptor (60), respectively.

Palmer explains in column 6, lines 63-66 that the object tracking unit creates a history of objects

and how they move through successive frames, corresponding to the claimed moving vector.

Palmer then explains that the output from the generator (70 of figure 4, which includes the object

tracking unit, 72) is stored as a video object descriptor in column 7, lines 5-9. The action

parameters and size , which are stored by Palmer in the video object descriptor, correspond to the

claimed affine transformation coefficient.

7.   Claims 22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Palmer

in view of Itokawa, in view of Ito et al, and further in view of Chen (U.S. Patent No. 6,278,466).

Referring to claims 22 and 24,

i.   The feature data of the background including at least one of color information is

not explicitly explained by Palmer or Itokawa. However, Ito et al explain using the color

distribution of an object in order to track an object, corresponding to claims 1 and 14.

Color information of a background, as determined by Ito et al, can also be saved in the

video descriptor of Palmer and Itokawa in order to describe an entire frame of video.

Furthermore, by saving the color information of an object and a background, the frame is

more accurately described, leading to more accurate object tracking at the cost of

computation power. Therefore, it would have been obvious to one of ordinary skill in the

art at the time the invention was made to include color information as feature data of a

background in order to track an object through video more accurately.

ii.   The feature data of the background including at least one of camera-work

information describing an operation of a camera used for the input video is not explicitly

explained by Palmer or Itokawa or Ito et al. However, Chen explains a text descriptor of

background frame data including text descriptions of "Camera Still", "Camera Pan", and

"Camera Zoom" in column 22, line 64 to column 23, line 15. By including camera-work

information in a video object descriptor, the background motion will be better defined in

the system of Palmer, Itokawa, and Ito et al. It would have been an obvious matter of

design choice to modify the video object descriptor of Palmer, Itokawa, and Ito et al to

include camera-work information, since the Applicant has not disclosed that having

camera-work information solves any stated problem or is of any particular purpose.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to include camera-work information in the video object descriptor so

that the background motion of the video sequence is more accurately described.

Conclusion

8.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

9.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

> Hennessey et al (U.S. Patent No. 6,014,461) – To exhibit generating a high level
>
> descriptor of an object or anomaly including size, shape, color, and sharpness as
>
> explained in the abstract.
>
> Golshani et al (U.S. Patent No. 6,594,386) – To exhibit indexing and retrieving
>
> images by their color content and spatial distribution as illustrated in figure 2.

>Zlatsin et al (U.S. Patent No. 6,377,296) – To exhibit classifying an object
>
>according to attributes including size, color, ... as illustrated in figure 6.
>
>Jeannin (U.S. Patent No. 6,587,574) – To exhibit using a descriptor in video to
>
>describe an object, wherein the object ID includes location, color, size, shape etc
>
>information as explained in column 10, lines 50-63 and illustrated in figure 4.

10.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Hussein Akhavannik whose telephone number is (703)306-4049.
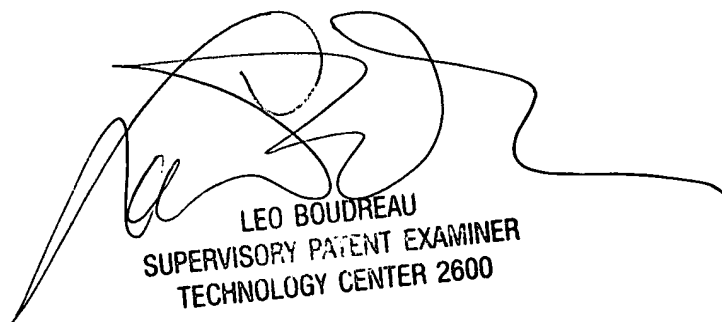
The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Leo H. Boudreau can be reached on (703)305-4706. The fax phone number for the

organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is (703)305-3900.

Hussein Akhavannik H. A.
October 2, 2003

LEO BOUDREAU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600